Randomized Parallel Algorithms for Trapezoidal Diagrams (Classic Reprint) (Hardback)

By Kenneth L Clarkson

Forgotten Books, 2018. Hardback. Condition: New. Language: English . Brand New Book ***** Print on Demand *****.Excerpt from Randomized Parallel Algorithms for Trapezoidal Diagrams We describe randomized parallel Crew Pram algorithms for building trapezoidal diagrams of line segments in the plane. For general segments, we give an algorithm requiring optimal $O(A$] $n \log n$) expected work and optimal $O(\log n)$ time, where A is the number intersecting pairs of segments. If the segments form a simple chain, we give an algorithm requiring optimal $O(n)$ expected work and $O(\log n \log \log n \log^* n)$ expected time, and a simpler algorithm requiring $O(n \log^* n)$ expected operations. For a set of segments forming K chains, we give an algorithm requiring $O(A + n \log^* n + K \log n)$ expected work and $O(\log n \log \log n \log^* n)$ expected time. The parallel time bounds require the assumption that enough processors are available, with processor allocations every $\log n$ steps. 1. Introduction 1.1 Results and related work We give several algorithms for building trapezoidal diagrams of line segments in the plane. These algorithms reach or approach optimality with respect to three parameters: the number n of segments, the number A...

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